

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
17 June 2004 (17.06.2004)

PCT

(10) International Publication Number
WO 2004/051617 A3

(51) International Patent Classification⁷: G09G 3/32, 3/22

Mark, Thomas [GB/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).

(21) International Application Number:
PCT/IB2003/005466

(74) Agent: VOLMER, Georg; Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).

(22) International Filing Date:
27 November 2003 (27.11.2003)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02102679.4 4 December 2002 (04.12.2002) EP

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

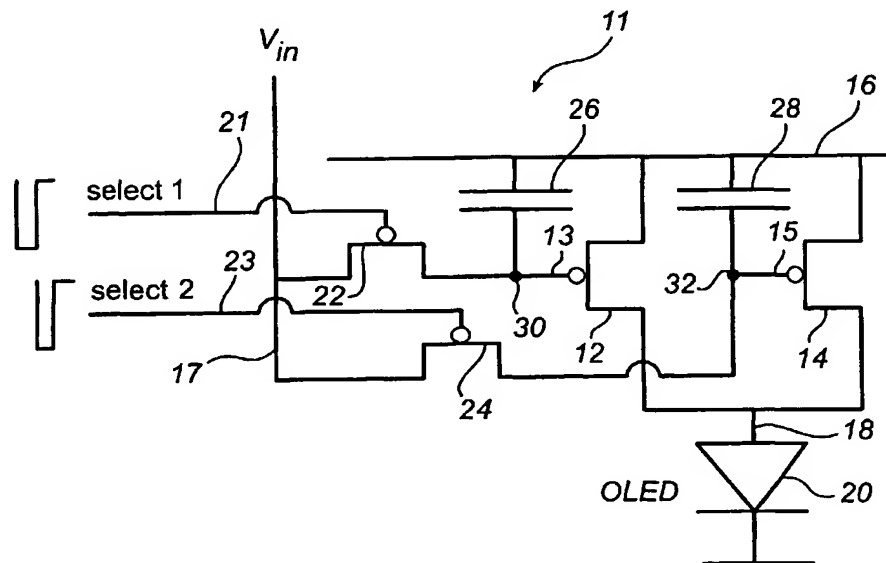
(72) Inventors; and

(75) Inventors/Applicants (*for US only*): GIRALDO, Andrea [IT/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE). JOHNSON,

Published:
— with international search report

[Continued on next page]

(54) Title: ACTIVE MATRIX PIXEL CELL WITH MULTIPLE DRIVE TRANSISTORS AND METHOD FOR DRIVING SUCH A PIXEL



(57) Abstract: A pixel cell in an active matrix display comprising a current driven emissive element such as an OLED (20) and a data input (17) for receiving an analogue data signal (V_{in}). The pixel has at least two drive elements (12, 14), each being connected to a power supply (16) and arranged to drive the emissive element in accordance with the data signal, and selecting means (22, 24) for providing, in response to a select signal (21, 23), the data signal to at least one of the drive elements (12, 14). Further, each drive element is adapted to drive the emissive element (20) in a different drive current range in response to a given data signal. Thereby, a required brightness range can be obtained while data voltages too close to the threshold voltage may be avoided.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:
26 August 2004

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/IB 03/05466

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G09G3/32 G09G3/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G09G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 170 718 A (SEIKO EPSON CORP) 9 January 2002 (2002-01-09) paragraphs '0033!', '0034!'; figures 8,9	1-6
Y	US 6 011 529 A (IKEDA NAQYASU) 4 January 2000 (2000-01-04) column 8, line 21 - column 9, line 15; figure 9	1-6
Y	WO 02/17289 A (EMAGIN CORP) 28 February 2002 (2002-02-28) cited in the application figure 3	1-6

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

21 June 2004

Date of mailing of the international search report

28/06/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Amian, D

BEST AVAILABLE COPY

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1170718	A	09-01-2002	CN 1388951 T	01-01-2003
			EP 1170718 A1	09-01-2002
			WO 0205254 A1	17-01-2002
			US 2002033718 A1	21-03-2002
US 6011529	A	04-01-2000	JP 2689916 B2	10-12-1997
			JP 8054835 A	27-02-1996
			JP 2689917 B2	10-12-1997
			JP 8054836 A	27-02-1996
			US 5940053 A	17-08-1999
			US 5714968 A	03-02-1998
WO 0217289	A	28-02-2002	AU 8510101 A	04-03-2002
			WO 0217289 A1	28-02-2002
			US 2002044110 A1	18-04-2002

BEST AVAILABLE COPY